Budget Request for FY 2010

Witness appearing before the
Senate Subcommittee on Labor-HHS-Education Appropriations

Elizabeth G. Nabel, M.D
National Heart, Lung, and Blood Institute

May 21, 2009

Mr. Chairman and Members of the Committee:

I am pleased to present the President's Fiscal Year 2010 Budget request for the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH). The Fiscal Year (FY) 2010 budget of $3,050,356,000 includes an increase of $34,667,000 over the FY 2009 appropriated level of $3,015,689,000.

The NHLBI provides global leadership for a research and education program to promote prevention and treatment of heart, lung, and blood diseases. The vision is to enhance the health of all individuals and thereby enable them to lead longer and happier lives. The work of Institute is guided by the goals and approaches outlined in its Strategic Plan, which was completed and published in September 2007 and submits that its research projects re consistent with the President's multi-year commitment for Cancer and Autism.

This statement describes several initiatives that are being undertaken during the current FY and outlines a number of opportunities to be addressed in FY 2010.

STEM CELL CONSORTIUM

Recent advances in knowledge, coupled with development of new technologies and reagents, have set the stage for rapid progress in the field of regenerative biology and medicine. The NHLBI is capitalizing on this extraordinary opportunity through formation of a Progenitor Stem Cell Biology Consortium that includes leading scientists in the fields of cardiovascular, pulmonary, and hematopoietic cell biology working closely with experts in the general field of progenitor cell biology. Its goal is to identify and characterize progenitor cell lineages, to direct the differentiation of stem and progenitor cells to desired cell fates, and to develop strategies to address the challenges presented by the transplantation of such cells. The Institute will fund six research hubs and one administrative coordinating center in FY 2009, with plans for a total support period of 7 years.

CLINICAL TRIAL OF HYPERTENSION MANAGEMENT STRATEGIES

A new clinical trial, the Systolic Blood Pressure Intervention Trial (SPRINT), was launched in FY 2009. The health benefits of lowering blood pressure in individuals with hypertension have been well demonstrated, and current practice strives to achieve a systolic blood pressure (SBP) level below 140 mmHg for most patients. However, epidemiological evidence suggests that the optimal SBP goal may be even lower. SPRINT will enroll about 7,500 individuals with hypertension or pre-hypertension, randomly assign them to a SBP goal of <120 mmHg or <140 mmHg, and assess cardiovascular disease outcomes. The potential public health impact of this work is substantial, given the multi-millions of people in this country and worldwide who suffer from high blood pressure.

ASTHMA NETWORK

The NHLBI has for many years supported highly successful clinical research networks designed to fill gaps in science and address emerging areas of concern in the management of asthma. Upon the anticipated end of the current funding period for the asthma networks, the Institute convened a workshop to obtain advice from key scientific leaders on a network structure that would sustain the past success and meet future clinical research needs. As a result of its recommendations, the Institute is establishing AsthmaNet, a clinical research network that will develop and conduct clinical trials of new treatment and management approaches in pediatric and adult populations. Launched in FY 2009, AsthmaNet will include multiple clinical centers and one data coordinating center. The NHLBI's plans for promoting use of shared resources and promoting programmatic and scientific efficiency in the network coincide with the expansion of the NIH Roadmap initiative to Re-engineer the Clinical Research Enterprise through the Clinical and Translational Science Award program.

HEMOGLOBINOPATHIES DATA SYSTEM

The NHLBI is developing and implementing a national data system and biospecimen repository on people with sickle cell disease, thalassemia, and hemoglobin E disease. It will be designed to collect, analyze, interpret, and disseminate state-specific data on the epidemiology, clinical characteristics, health care utilization, and community resources of patients with these conditions. The system will support research, information dissemination, policy decisions, health care planning, and provider training at the social, state and national levels. This FY 2009 initiative is being conducted via an interagency agreement with the CDC.

CARDIAC TRANSLATIONAL RESEARCH IMPLEMENTATION PROGRAM (C-TRIP)

A new program has been designed to accelerate the movement of laboratory discoveries to the bedside of patients with heart failure or arrhythmias. C-TRIP is a two-stage project to speed translation of promising new therapeutic interventions derived from basic research through well-designed clinical trials to demonstrate safety and efficacy. Two-year stage 1 exploratory planning grants, to be awarded in FY 2010, will support feasibility studies, analysis of existing data, preparation for regulatory clearances, team-building, development of clinical management tools and recruitment strategies, and finalization of protocols. Subsequently, stage 2 grant applications will be considered for the conduct of the safety and efficacy trials.

NEW PROGRAMS TO PREVENT AND TREAT CHILDHOOD OBESITY

Obesity is a major cause of morbidity and mortality, and effective interventions are urgently needed to address this increasingly prevalent public health menace. A new research consortium will test the efficacy of innovative approaches to prevent weight gain among normal-weight young children and to prevent additional weight gain or facilitate weight loss among obese adolescents.

Interventions will be expected to address the multiple etiological factors that shape daily diet and physical activity behaviors, including biological, physiological, person, environmental, and health care factors. In FY 2010, the NHLBI plans to solicit applications from existing networks that have the infrastructure in place to conduct high-quality research and translate it into community and clinical practice.

A second FY 2010 initiative will examine outcomes associated with existing community programs designed to reduce childhood obesity by improving children's diet and physical activity. One research unit will be funded to serve as a study coordinating center, which will work with the National Collaborative on Childhood Obesity Research to design and implement the research. The study will establish common metrics for evaluation of the programs and examine outcomes associated with program policies, environments, educational activities, dietary and physical activity regimens, and other factors. The goal is to inform national and local policy for control of childhood obesity.

RESUSCITATION OUTCOMES CONSORTIUM (ROC) RENEWAL

In 2004 the NHLBI, the American Heart Association, the U.S. Department of Defense, and several Canadian health agencies established the ROC to design and conduct studies of promising experimental strategies to resuscitate patients who experience out-of-hospital cardiac arrest or life-threatening trauma. The ROC brings together investigators, hospitals, emergency medical services (EMS), and local communities to address the unique characteristics of this research and ensure the efficient translation of proven strategies into clinical practice. In addition to supporting new trial protocols, the 2010 renewal will develop information to define and improve pre-hospital best practices, facilitate public health efforts for the prevention of emergency life-threatening conditions, and improve EMS delivery and training.

PREMATURITY AND RESPIRATORY OUTCOMES PROGRAM (PROP)

The new PROP will promote collaborative, innovative research to identify mechanisms and associated biomarkers of respiratory disease risk of premature infants who are ready for discharge from the neonatal intensive care unit (NICU). Increased survival of very premature infants is leading to increasing numbers of children with chronic lung disease that often results in multiple readmissions. Currently no objective measures exist that can be used to predict which premature newborns will have persistent respiratory problems after discharge from the hospital. This cooperative, multidisciplinary scientific group will investigate hypotheses on the molecular mechanisms that make certain premature newborns prone to develop recurrent respiratory disease, with the long-term goal of improving outcomes in the first year of life.

NHLBI PROTEOMICS INITIATIVE

The Institute will continue to invest substantial resources in the use of proteomic approaches and technologies to develop a greater understanding of pathway and interactions that influence heart, lung, and blood diseases. Planned for FY 2010 is a combined renewal of the NHLBI Proteomic Centers and the NHLBI Clinical Proteomic Program, both of which terminate in September 2009. Each of seven centers will focus on proteomic technology development and molecular mechanistic and functional studies related to a specific clinical need, problem, or disease. The ultimate goal of this work is to bring greater precision, reliability, and sensitivity to detection, diagnosis, treatment, and prevention strategies for the individual patient.

We are delighted to have the opportunity to pursue these exciting new research avenues. I would be pleased to answer any questions the Committee may have.

Elizabeth G. Nabel, M.D. is Director of the National Heart, Lung, and Blood Institute at the National Institutes of Health, where she oversees an extensive national research portfolio with an annual budget of approximately $3.0 billion to prevent, diagnose, and treat heart, lung, and blood diseases.

A native of St. Paul, Minnesota, Dr. Nabel received her M.D. at Cornell University Medical College before moving to Brigham and Women's Hospital, Harvard University where she completed her residency in internal medicine and a clinical/research fellowship in cardiovascular (CV) medicine. She is board-certified in internal medicine and CV diseases. Dr. Nabel joined the faculty at the University of Michigan in 1987 as an Assistant Professor of Medicine and rose through the ranks, becoming Director of the Cardiovascular Research Center in 1992, Professor of Internal Medicine and Physiology in 1994, and Director of the Division of Cardiology in 1997. Dr. Nabel joined the NHLBI in 1999 as Scientific Director for Clinical Research, and in 2005 became Director.

Dr. Nabel has intertwined basic research and translation to clinical medicine throughout her career and has championed the concept of "bench to bedside." At the University of Michigan, she became known for her research in molecular cardiology and vascular biology and for her gene transfer studies in the CV system. Dr. Nabel has had a longstanding interest in genetic and cellular therapies for CV disease, having developed techniques for the introduction and expression of recombinant genes into blood vessels in vivo. Her group conducted many basic studies investigating the expression and function of growth factor, cytokine, and cell cycle genes in the vasculature, which led to gene and cell-based trials for CV diseases in the United States and Europe.

Her current research interests are focused on the molecular genetics of vascular diseases, where she has investigated the regulation of smooth muscle cell growth by cell cycle proteins, a process important for the development of atherosclerosis. Her NIH lab has characterized the role of the cyclin-dependent kinase inhibitors on vascular proliferation, inflammation, and progenitor cells. These inhibitors are important

negative regulators of vascular smooth muscle cell growth and inflammation, and work from her lab has opened up new avenues for therapeutic targets in blood vessels. Her current work focuses on the rare premature aging disorder, Hutchinson-Gilford Progeria Syndrome, where she has characterized the smooth muscle cell defect leading to premature heart attack and stroke in children in their early teens. She is the author of 240 publications, has mentored >50 students, and is a partner on 17 patents.

Among her leadership efforts as Director of the NHLBI, Dr. Nabel developed a broad based institute Strategic Plan, and she subsequently has launched new scientific programs in the genomics of complex diseases, stem and progenitor cell biology, translational research, systems biology, nanotechnology, global health, and implementation science. She redesigned much of the NHLBI intramural program. She performs multiple leadership functions at the NIH, including co-chair of the Management and Budget Working Group, which oversees NIH central services and Clinical Center budgets, and management and human capital policies; development of genomic medicine programs and an NIH-wide data sharing policy for genome-wide association studies to guide transition of genomics to medicine; leadership of multiple public health programs, including the national Red Dress campaign; and co-chair of the NIH Obesity Research Task Force.

Her awards include the Willem Einthoven Award; the Amgen-Scientific Achievement Award; the American Heart Association Distinguished Achievement Awards; the Eugene Braunwald Academic Mentorship Award; the Distinguished Alumni Award from Weill Cornell Medical College; and honorary doctorates from the University of Leuven, Belgium, Mt. Sinai School of Medicine in New York, and the University of Glasgow, Scotland. She is an elected member of the Institute of Medicine of the National Academy of Sciences, the American Academy of Arts and Sciences, the American Association for the Advancement of Science, the American Society of Clinical Investigation, and the Association of American Physicians, where she serves on the IOM and AAP Councils. Dr. Nabel has also served as Councilor and Secretary for the ASCI; and Associate Editor of the JCI; Board of Reviewing Editors for *Science*.